

Space Weather Forecast

Issued on Friday, 20 October 2023 at 01:17 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Weak CME arrivals possible, with a slight chance of isolated Minor Geomagnetic Storm intervals throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with only low level Common class flares. There are currently three numbered regions on the visible disc and two unnumbered regions, all of which are relatively small and simple, and either stable or in decline. A Coronal Mass Ejections (CMEs) is apparent in imagery, starting around 19/1800 UTC from the southeast quadrant from a plage region. This event will be analysed once more imagery becomes available, but is unlikely to be Earth directed.

Solar Wind / Geomagnetic Activity: The solar wind started at slightly elevated levels around 430 km/s and then gradually declined to end the period at background levels around 320 km/s. The solar wind's magnetic field was predominantly weak, although it did briefly reach moderate levels at the start of the period. Meanwhile important the north-south component was mostly weakly southwards, but still geomagnetic activity was only Quiet to Unsettled.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Very Low to Low activity is expected. There is a Slight Chance of isolated Moderate flares through the period, with any significant flares most likely from a small region in the western hemisphere, but also from regions currently on the far side of the Earth which may rotate onto the Earth facing side within the forecast period.

Solar Wind / Geomagnetic Activity: The geomagnetic forecast is complex and carries high uncertainty. There are three potentially Earth directed CMEs and therefore today, tomorrow and day 3 (20-22nd Oct) there is chance of geomagnetic activity becoming enhanced, but most likely today. The recent fast winds from a coronal have now abated. A potential weak solar wind enhancement may arrive over the next two days, but confidence is low as the coronal hole feature is now small and diminishing.

Geomagnetic activity is likely to be Quiet, but with spells of Unsettled to Active activity and a Chance or Slight Chance of Minor Storm intervals if and when any CME's arrive.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	40	20	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	5	5	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)